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Simulation of spin-polarized transport in submicrometer device structures

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Abstract

© 2003 IEEE. The Monte Carlo approach is utilized to study spin-polarized electron transport in spintronic device structures. Evolution of the electron spin polarization vector is controlled by the spin-orbit interaction. Spin polarization properties, including the spin-dephasing length and orientation of the polarization vector, are investigated, for the applied voltage from 0.05 V to 0.25 V, and for temperatures ranging from 77 K to 300 K.

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Keywords

Computational modeling, Distribution functions, Electrons, Magnetoelectronics, Monte Carlo methods, Physics, Polarization, Quantum computing, Region 8, Spin polarized transport